

REVISION OF *TACHIONA* SHARP  
(COLEOPTERA: STAPHYLINIDAE: ALEOCHARINAE)  
WITH A DESCRIPTION OF THE LARVA OF *T. LATIPENNIS*,  
NEW SPECIES, AND A PRELIMINARY ASSESSMENT  
OF GENERIC RELATIONSHIPS

JAMES S. ASHE<sup>1</sup> AND Q. D. WHEELER<sup>2</sup>

*Abstract.*—The aleocharine genus *Tachiona* Sharp and the single previously described species *T. deplanata* Sharp from Mexico are redescribed. A lectotype is designated for *T. deplanata* from the syntype series. Two new species, *T. nitida* Ashe and *T. latipennis* Ashe, are described from material collected in Mexico and Panama respectively. A key is provided for separation of the known species of *Tachiona*. Larvae collected in association with adults of *T. latipennis* from the interior of a web covering a tree wound were presumed to be conspecific with them, described, and compared with larvae collected with a female of *T. nitida* from a similar web-covered tree hole. Illustrations of diagnostic features of adults and larvae are provided. Based on mouthpart structure, particularly the styliform labial palpi and elongated maxillary lobes, *Tachiona* is shown to be a member of the probably monophyletic bolitocharine subtribe Silusina. Within the Silusina, members of *Tachiona* are very similar to those of *Diestota* Mulsant and Rey in a number of characteristics, especially form of the spermatheca and aedeagus. More precise analysis of relationships among the Silusina must await a more detailed survey of structural features among included taxa.

---

In 1978, while collecting in Panama, one of us (Wheeler) discovered a number of curious aleocharine staphylinids and associated larvae on the inside of an unusual web mixed with wood chips covering a two inch diameter hole in a living tree. A number of the adults and larvae were collected and the curious habitat noted and photographed. Later the staphylinids were deposited in the Field Museum of Natural History. When adults were recently examined and compared with determined specimens in the Field Museum, they proved to represent an undescribed species in the very poorly known genus *Tachiona* Sharp. Recently, a specimen of a third species was collected with associated larvae from the inside of a similar web covering a tree hole in Mexico by Dr. J. K. Liebherr and made available to us.

*Tachiona* was described by Sharp in 1883 based on three female specimens collected in Mexico. From these he described a single species, *T. deplanata*. Except for repetition of Sharp's description by Fenyés (1920), we have been unable to locate any later reference to this genus other than catalog citations (e.g., Bernhauer and Scheerpeltz, 1926). Although members of *Tachiona* are very distinctive in general habitus, the descriptions of both the genus and the single included species are very sketchy and incomplete. Were it not for the habitus drawing of *Tachiona deplanata*

---

<sup>1</sup> Division of Insects, Field Museum of Natural History, Chicago, Illinois 60605, U.S.A.

<sup>2</sup> Department of Entomology, Comstock Hall, Cornell University, Ithaca, New York 14853, U.S.A.

provided by Sharp (1883, plate 6, fig. 21), it would be virtually impossible to identify specimens of *Tachiona* from available literature.

Discovery of two undescribed species with associated larvae and the fortunate presence of a specimen of the syntype series of *T. deplanata* in the collections of the Field Museum provided us with the opportunity to redescribe the genus and type species, describe the new species and their probable larvae, and discuss the probable taxonomic position and phylogenetic relationships of *Tachiona*.

### *Tachiona* Sharp

*Tachiona* Sharp, 1883:284–285; Fenyés, 1920:127–128; Bernhauer and Scheerpeltz, 1926:562.

*Diagnostic combination.* Among aleocharine genera with 4,4,5 tarsal segmentation members of *Tachiona* are easily recognized by the combination of: broad, explanate and flattened body form; slightly to markedly emarginate clypeal margin; styliiform labial palpi (Fig. 5); elongate, apically bifid ligula (Fig. 5); elongate galea and lacinia (Fig. 2); markedly transverse pronotum with fully exposed hypomera; pronotal setae directed laterally or slightly latero-caudad from midline; mesocoxae very widely separated by more or less truncate meso- and metasternal processes; the distinctive secondary sexual characteristics; and, the distinctive complexly coiled female spermatheca (Figs. 10, 11).

*Description.* Moderate sized, length 5.0–6.5 mm. Body shape very broad and explanate in dorsal aspect, markedly dorso-ventrally flattened, abdomen tapered from broad base to moderately pointed apex. Body color reddish-flavate to light reddish-brown with or without darker piceus or blackish markings on head, prothorax, elytra and apical abdominal segments. Body sculpture with head, pronotum and elytra obsoletely reticulate or smooth and abdomen obsoletely reticulate to distinctly transversely reticulate, integument surface strongly shining; integument moderately to sparsely and more or less uniformly pubescent with short and appressed microsetae; macrosetae conspicuous, long and black.

**HEAD.** Broadly transverse, about 1.5–1.9 times as wide as long; basal angles broadly rounded; covered basally by anterior margin of pronotum; neck absent. Eyes moderate in size, directed anteriorly, greatest width across eyes about equal to width of head at posterior margin of eyes. Margin of clypeus slightly to markedly emarginate medially. Tempora moderately long, about 1.2–1.5 times length of eyes, rounded basally. Infraorbital carina well developed beneath eye and on lateral base of head and complete to maxillary fossae; neck carina well developed to gular sutures. Microsetae fine, uniformly distributed, moderately dense to more or less sparse, appressed to suberect, directed from lateral margins toward midline of head or slightly antero-medially; punctures moderate in size, uniformly distributed. Antenna very short to moderate in length, length equal to head and pronotum together or extended to basal 0.4 of elytra, articles moderately to very compactly arranged, segments slightly to markedly flattened; antennomere IV quadrate to markedly transverse, V quadrate to markedly transverse, 1.0–3.5 times as wide as long, VI–IX transverse, about equal in size and shape or more distal segments slightly wider and more transverse, antennomere X slightly to markedly transverse, about 1.2–2.5 times as wide as long.

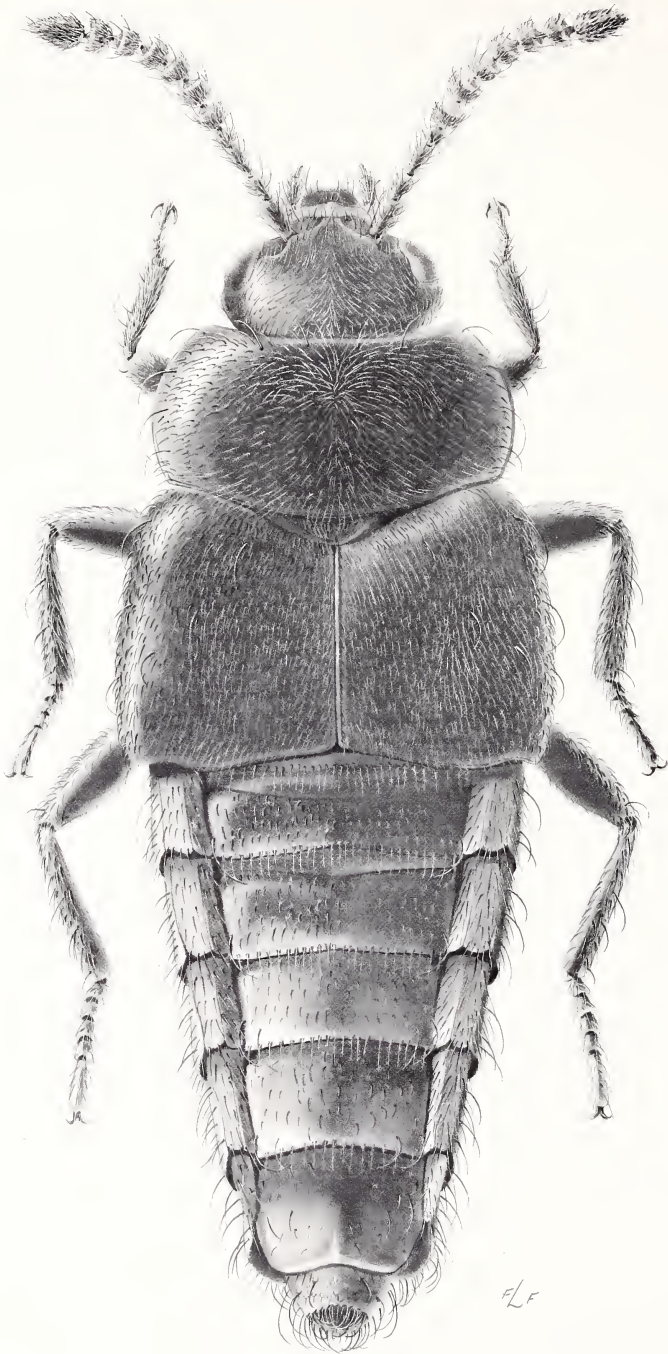


Fig. 1. *Tachiona latipennis* Ashe, habitus.

**MOUTHPARTS.** Labrum as in Figure 3. Right mandible (Fig. 4) with slight but inconspicuous projection in area of internal tooth, absent from left mandible; mandibular apices acute, entire; molar region with numerous small teeth in transverse rows; prostheca with flattened, apically emarginate structures medially. Maxilla (Fig. 2) with galea and lacinia elongate, about equal in length; galea more robust than lacinia, apex densely pubescent with long filiform setae; lacinia elongate, slender, more or less acutely pointed, internal surface with comb of single row of well separated spines in apical 0.25 followed more proximally by a small dense patch of setae medially with or without a large, robust spine at the proximal edge, and a distinct row of numerous setae on dorsal surface in proximal 0.7; maxillary palpus 4-articled, without pseudosegment on article IV. Labium (Fig. 5) with palpi 2-articled, styliiform, elongate; ligula elongate, slender, about 3.0–3.2 times as long as greatest width, divided into two lobes in apical 0.3, apex of lobes narrowed to short, robust, digitiform projections; medial setae 2, bases more or less contiguous on slight knob or projection; prementum with 5–6 pseudopores in narrow longitudinal row medially, and with 2 large pores, 1 large spinose pore and about 10–15 small pseudopores laterally on each side.

**THORAX.** Pronotum markedly transverse, about 1.7–2.3 times as wide as long; very flattened in cross section; margin distinctly beaded; antero-lateral angles obtusely rounded and indistinct, posterior angles distinct, sides broadly rounded; widest near middle or in apical third; posterior margin slightly and broadly bisinuate or sinuations absent and base broadly rounded; microsetae numerous to relatively sparse, uniformly distributed, appressed, setae directed laterally or slightly latero-caudad from midline, setae in midline directed posteriorly in posterior 0.6–0.7 and more or less anteriorly in anterior 0.4–0.3; macrosetae conspicuous, long, thin and dark; surface uniformly and moderately punctured, distance between punctures about 1.0 to 2.0 times average width of punctures; integument microsculpture obsoletely reticulate to smooth, surface strongly shining. Hypomera broadly and entirely visible in lateral aspect. Elytra 1.2–1.3 times as long as pronotum; outer apical angles slightly sinuate or sinuations obsolete; microsetae numerous, uniformly distributed, setae directed more or less posteriorly; macrosetae long, thin and dark, three macrosetae on lateral margin especially conspicuous; integument with microsculpture smooth to obsoletely reticulate between punctures, surface strongly shining; surface uniformly and moderately punctured, distance between punctures slightly less than to about 1.3 times average width of punctures. Prosternum transverse, produced medially as a large knob or longitudinal carina. Mesosternum very short in front of coxae, not carinate medially; meso- and metasternal processes very broad, almost contiguous at middle of mesocoxal cavities, mesocoxal cavities very broadly separated; mesosternal process moderate in length, extended to 0.3–0.4 times length of mesocoxal cavities, very broad and truncate apically; metasternal process long, extended to near middle of mesosternal cavities, truncate apically; isthmus very short, broad, in same plane as metasternal process and distinguished from it only by a slight bead which delimits the anterior margin of the metasternal process. Mesosternal process: isthmus: metasternal process ratio about 4:1:5. Metepisternal setae numerous, in 3–4 irregular rows, setose area not delimited by a carina. Legs with tarsal formula 4,4,5; posterior tarsomeres I–IV approximately equal in length and V about as long or slightly longer than II–IV together. Tarsomeres not robust and only slightly flattened laterally to distinctly robust and markedly flattened laterally.

**ABDOMEN.** General shape broad at base and sides uniformly converging to more or less acutely pointed apex. Terga III–IV slightly to moderately transversely impressed at base. Sterna not impressed. Tergum X quadrate, setal patch quadrate with setae absent postero-medially to produce an inverted, slightly V-shaped setal patch. Integument of abdomen with transverse microsculpture moderately developed or microsculpture obsolete, integument strongly shining.

**AEDEAGUS.** (Figs. 6, 8, 9) Relatively simple, without complex internal hooks, spines or plates.

**SPERMATHECA.** (Figs. 10, 11) Complex and doubly coiled, with elongate basal bulb.

**SECONDARY SEXUAL CHARACTERISTICS.** Male abdominal tergum VII with broad, low medial carina; tergum VIII (Fig. 7) produced as broad truncate lobe, apical margin of lobe with 3–4 small teeth on each half of midline; surface of terga VII–VIII with numerous posteriorly directed asperities. Female tergum VII similar to male or carina absent, with or without small rounded spine on each side of midline; tergum VIII slightly produced as a broad truncate lobe, apical margin of lobe entire, without serrations, with or without small rounded subcarinate spine on each side of midline; surface of terga VII–VIII with numerous, very large, posteriorly directed asperities, or tergum VII without asperities.

*Type species.* *Tachiona deplanata* Sharp, by monotypy.

*Distribution.* Presently known only from southern Mexico and Panama.

*Biology.* Little information is available about the biology of members of *Tachiona*. Sharp (1883) gave no data about the habitat from which specimens in the type series of *T. deplanata* were collected. Good habitat data are available for collections of *T. nitida* and *T. latipennis*, but the data are decidedly enigmatic and confusing. Adults and presumably conspecific larvae of *T. latipennis* were found together on the inside of a dense web matted with wood chips which covered a hole of about 2 inches in diameter in the trunk of a living tree. The web is about 4 inches in diameter, densely woven of coarse, irregular silken threads, which incorporate a substantial number of wood chips, and is up to 1 mm thick. The overall texture of the web is rather leathery. An adult female and larvae of *T. nitida* were also found on the inside of a very similar web over a hole in a tree. In this instance, the web was about 1.5 inches in diameter and covered a hole in a standing dead tree trunk. Except for size, the two webs were remarkably similar. We considered the possibility that the staphylinids were responsible for the webbing, but were not able to find support for this proposition. While larval aleocharines are known to produce a very fine silk for production of a pupal cocoon (Ashe, 1981; Frank and Thomas, 1984), adults are not known to produce silk. It seems unreasonable to suggest that the larvae present could have produced the coarse silk used in the webbing, or that they could have produced the very large quantity of silk present. In addition, microscopic examination of the webs revealed no sign of larval exuviae, egg cases, remnants of food, or any other sign of long term occupation by members of *Tachiona*. Since the silk webbing includes wood chips of a kind similar to those found in the holes, it seems likely that whatever produced the holes is also responsible for the covering. The best candidate for this is one of the stem-boring Lepidoptera larvae. Such bark and web capped holes have been found in association with cast skins of Lepidoptera larvae in Chiriqui by Dr.

A. Aiello (in litt.), and a head capsule of a lepidopteran larva was found in association with the web from which specimens of *T. nitida* were collected. It therefore seems unlikely that the beetles are responsible for formation of these unusual structures. However, all available biological information for specimens of *Tachiona* is remarkably consistent. Association of adults and larvae of two species, on two separate occasions, with such an unusual habitat is highly suggestive and implies that such web-covered holes may play an important role in the natural history of members of *Tachiona*.

KEY FOR THE SEPARATION OF KNOWN SPECIES OF *TACHIONA* SHARP

Only three species of *Tachiona* are known. Of these, males of *T. deplanata* and *T. nitida* have not been discovered. Therefore, separation of species based on male secondary sexual characteristics or aedeagal form, methods which are usually very effective for distinguishing among species of aleocharine staphylinids, is not presently possible. Identification of specimens of known species must be based primarily on differences in color pattern and relative proportions of antennal articles. These characteristics are very reliable for distinguishing among the specimens at hand.

1. Body color light reddish-brown, without darker markings except for small diffuse blackish patch on lateral margins of elytra; head markedly transverse, about 1.9 times as wide as long; pronotum very transverse, about 2.3 times as wide as long; antennomere II subequal in length to III; antennomeres V–X compactly arranged and very transverse, width greater than 2.4 times length ..... *T. nitida*
- 1'. Body color reddish-flavate or light reddish-brown with distinctly darker markings on pronotum, elytra and abdominal segments; head moderately to broadly transverse, 1.5–1.8 times as wide as long; pronotum moderately transverse, not greater than 2.0 times as wide as long; antennomere II noticeably shorter than III, about 0.6–0.9 times length of III; antennomeres V–X compactly arranged or not, quadrate to moderately transverse, width not greater than 2.0 times length ..... 2
2. Ground color reddish-flavate with markedly contrasting piceus to black markings medially and longitudinally on pronotum, and on apico-lateral 0.5 of elytra and apical abdominal segments (Sharp, 1883, pl. 6, fig. 21); antennomeres I–IV rufo-flavate and V–XI piceus to black; legs flavate with tibiae (especially near apex) darker than femora; antennomere II about 0.6–0.7 length of III, very robust and broad apically; antennomeres compactly arranged, spaces between articles less than 0.2 times length of articles ..... *T. deplanata*
- 2'. Ground color reddish-brown, with less contrasting dark brown to piceus markings on pronotum, elytra and apical abdominal segments (Fig. 1); all antennomeres brown to piceus; legs reddish-brown, not noticeably darker near apex of tibia; antennomere II about 0.8–0.9 times length of III, not robust and only slightly broad apically; antennomeres not compactly arranged, spaces between articles greater than 0.25 times length of articles ..... *T. latipennis*

*Tachiona deplanata* Sharp

Fig. 11

*Description.* Length 5.0–6.0 mm. Body color reddish-flavate with head, median longitudinal stripe on pronotum, apico-lateral, 0.5 of elytra, posterior 0.20–0.25 of

paratergites, medial area of abdominal terga III–VII, posterior 0.5 of abdominal segment VII, and abdominal segments VIII–X darker, piceus to black. Antennal articles I–IV rufo-flavate and V–XI piceus to black. Legs flavate with tibiae darker than femora, especially near apex; tarsi piceus.

Head broadly transverse, 1.7–1.8 times as wide as long; slightly to obsoletely reticulate with irregularly isodiametric to slightly transverse sculpticells, surface shining between punctures; microsetae short, fine, appressed, moderately dense and uniformly distributed; punctures moderate in size, distance between punctures about 1.5–2.0 times as large as average width of punctures, more or less uniformly distributed. Anterior margin of clypeus deeply and broadly emarginate medially. Antenna short and robust, about as long as head and prothorax together; articles very compactly arranged, spaces between articles less than 0.2 times length of articles; article II about 0.6–0.7 times length of III, very robust and broad apically; article IV about as wide as apex of III, transverse, about 1.4 times as wide as long; article V wider than IV, transverse, 1.5 times as wide as long; articles V–X becoming slightly shorter and more transverse to article X; article X very transverse, about 2.0 times wider than long; article XI about as long as VIII–X together; antennal segments V–X distinctly flattened. Pronotum flattened and explanate dorsally, broadly transverse, about 2.0 times as wide as long, anterior margin slightly and very broadly emarginate around base of head, posterior margins broadly rounded, not bisinuate basally; microsetae fine, moderately dense, uniformly distributed; punctures moderate in size, distance between punctures about 1.0–1.5 times average width of punctures, slightly larger medially than laterally; integument between punctures smooth, shining. Elytra about 1.2 times as long as pronotum and about as wide at base as width of pronotum; situation of outer apical angles obsolete; punctures moderately dense, uniformly distributed, distance between punctures about 1.1–1.3 times average width of punctures, integument between punctures very obsoletely reticulate to smooth, surface shining. Tarsi robust and moderately flattened laterally. Abdominal terga and sterna with sparse setae and punctures; integument with obsolete to moderately distinct transverse microsculpture.

AEDEAGUS. Not known.

SPERMATHECA. (Fig. 11) Very complex, doubly coiled and looped.

SECONDARY SEXUAL CHARACTERISTICS. Male unknown. Female: tergum VII without medial carina, tergum VIII slightly produced posteriorly as broad truncate lobe, apical margin of lobe entire, without serrations, surface of terga VII–VIII with numerous very large, posteriorly directed asperities.

*Type series.* Lectotype, female, here designated, in the collection of the British Museum (Natural History), London. Lectotype has the following 5 labels: on card with specimen "Tachiona deplanata, type, D.S., Cordova, Mexico, Hoge"; a round red "type" label; "Cordova, Mexico, Hoge"; "B.C.A. Col.I.2, Tachiona deplanata Sharp"; "Lectotype, Tachiona deplanata Sharp, desig. J. S. Ashe, 1986."

Paralectotypes: 2, females, same data as lectotype (1 Field Museum of Natural History, 1 British Museum (Natural History)).

*Distribution.* Known only from the type locality given as "Cordova, Mexico" by Sharp (1883). Selander and Vaurie (1962, p. 68) showed this locality to be equal Cordoba, in the state of Veracruz ("2,624 ft elev., 18°35'N 96°50'W").

*Comments.* See comments under *T. nitida*.

***Tachiona nitida* Ashe, new species**

*Description.* Length 6.0 mm. Body color light reddish-brown throughout except for black head and small diffuse blackish patch in latero-posterior 0.5 of each elytron. Antennal articles dark brown to piceus. Legs light reddish-brown with tibiae dark brown and noticeably darker than femorae; tarsi piceus.

Head very broadly transverse, about 1.9 times as wide as long; without microsculpture, integument smooth and markedly shining between punctures; microsetae short, fine, more or less suberect, sparse and uniformly distributed; punctures moderately large, distance between punctures about 1.2–1.7 times as large as average width of punctures, more or less uniformly distributed. Anterior margin of clypeus deeply and broadly emarginate medially. Antenna short and robust, about as long as head and pronotum together; articles compactly arranged, spaces between articles about 0.2 times width of articles or less. Article II subequal in length to article III, very robust and moderately broad apically; article IV about as wide as article III at apex, broadly transverse, about 2.5 times as wide as long; article V wider than IV, broadly transverse, about 2.7 times as wide as long; articles VI–X similar in size and shape, broadly transverse, about 2.5 times as wide as long; article XI almost as long as VIII–X together; antennal articles V–X markedly flattened. Pronotum very flattened and explanate dorsally, very broadly transverse, about 2.3 times as wide as long; anterior margin broadly emarginate around base of head; posterior angles distinct, not broadly rounded; posterior margin broadly and shallowly bisinuate laterally, otherwise almost straight, not broadly rounded; microsetae fine, sparse, more or less distantly and uniformly distributed; punctures moderately large, distance between punctures about 1.5–2.0 times average width of punctures, punctures slightly larger medially than laterally; integument between punctures smooth, without microsculpture, except for very obsolete and faint transverse microsculpture in some regions, surface markedly shining. Elytra about 1.3 times as long as pronotum, outer apical angles slightly sinuate; punctures moderately dense, uniformly distributed, distance between punctures about 1.0–1.2 times average width of punctures; integument between punctures very obsoletely reticulate to smooth, surface markedly shining. Tarsi robust and markedly compressed laterally. Abdominal terga and sterna with sparse setae and punctures; integument with obsolete to markedly distinct transverse microsculpture.

AEDEAGUS. Not known.

SPERMATHECA. Very similar to that of *T. deplanata* (Fig. 11).

SECONDARY SEXUAL CHARACTERISTICS. Male not known. Female: tergum VII with very small but distinct spine on each side of midline, without medial carina or other large asperities; tergum VIII slightly produced as broad truncate lobe, apical margin of lobe entire, without serrations; surface of tergum VIII with numerous large, posteriorly directed asperities in addition to small subcarinate rounded spine on each side of midline in posterior 0.25.

*Type.* Holotype, a female, with labels as follows: "MEX: Veracruz, 9 Km w. Maltrata, hwy 150D, 13VIII87, J. K. Liebherr and D. A. Millman; ex. in treehole of dead stump covered with silk-like web; Holotype, *Tachiona nitida* Ashe, Desig. J. S. Ashe, 1986." The type specimen is missing antennal articles VI–XI on the right side and all tarsi on the right anterior leg. Deposited in the entomological collections of Cornell University, Ithaca, New York.



*Paratypes.* None. Known only from the type specimen.

*Distribution.* Known only from the type locality in the state of Veracruz in Mexico, near Maltrata, at an elevation of 1,900 meters.

*Comments.* *T. nitida* is known only from a single female. Normally we would consider it unwise to describe new aleocharine species without first knowing the male characteristics. However, in this instance, the known female representative of this new species is easily distinguished from all other known species of *Tachiona* by a variety of distinctive external characteristics. These features provide a sound basis for describing this species.

Among known species, specimens of *T. nitida* are most similar to those of *T. deplanata* from which they can be easily distinguished by those characteristics listed in the key as well as the larger, more sparsely distributed punctures of the head and pronotum and the distinctive female secondary sexual characteristics of *T. nitida*.

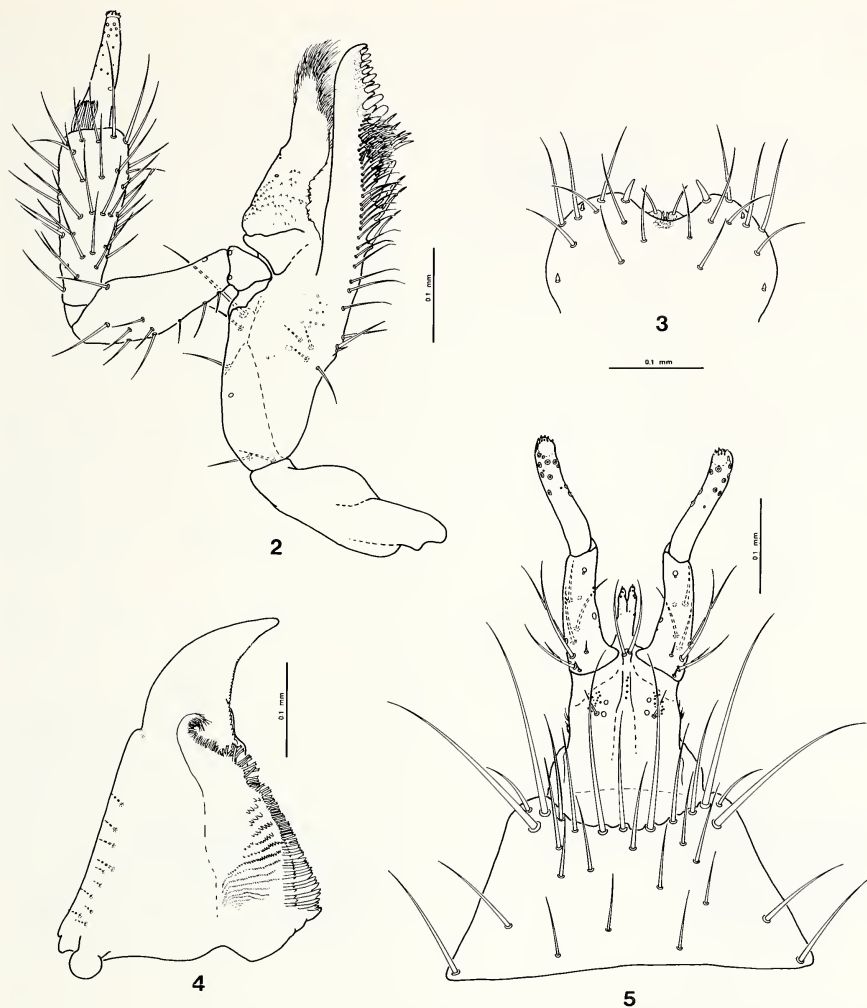
In many characteristics, *T. nitida* is the most highly derived species among known *Tachiona*. These relatively highly derived features include the very broad, transverse head and pronotum, the smooth and shining integuments, the compactly arranged, markedly flattened and very transverse antennal articles, and the very robust and laterally flattened tarsi. These features are also characteristic of specimens of *T. deplanata* and suggest a close relationship between these two species; however, they are not as markedly developed in this latter species.

#### ***Tachiona latipennis* Ashe, new species**

Figs. 1-10

*Description.* Length 5.0-6.5 mm. Body color light reddish-brown with head, posterior 0.5 and lateral areas of elytra, posterior 0.5 of tergum VI of some individuals, and terga VII-X dark brown to piceus brown. Antennal articles dark brown to piceus brown. Legs light reddish-brown, not noticeably darker near apex of tibia, some specimens with tarsi slightly darker.

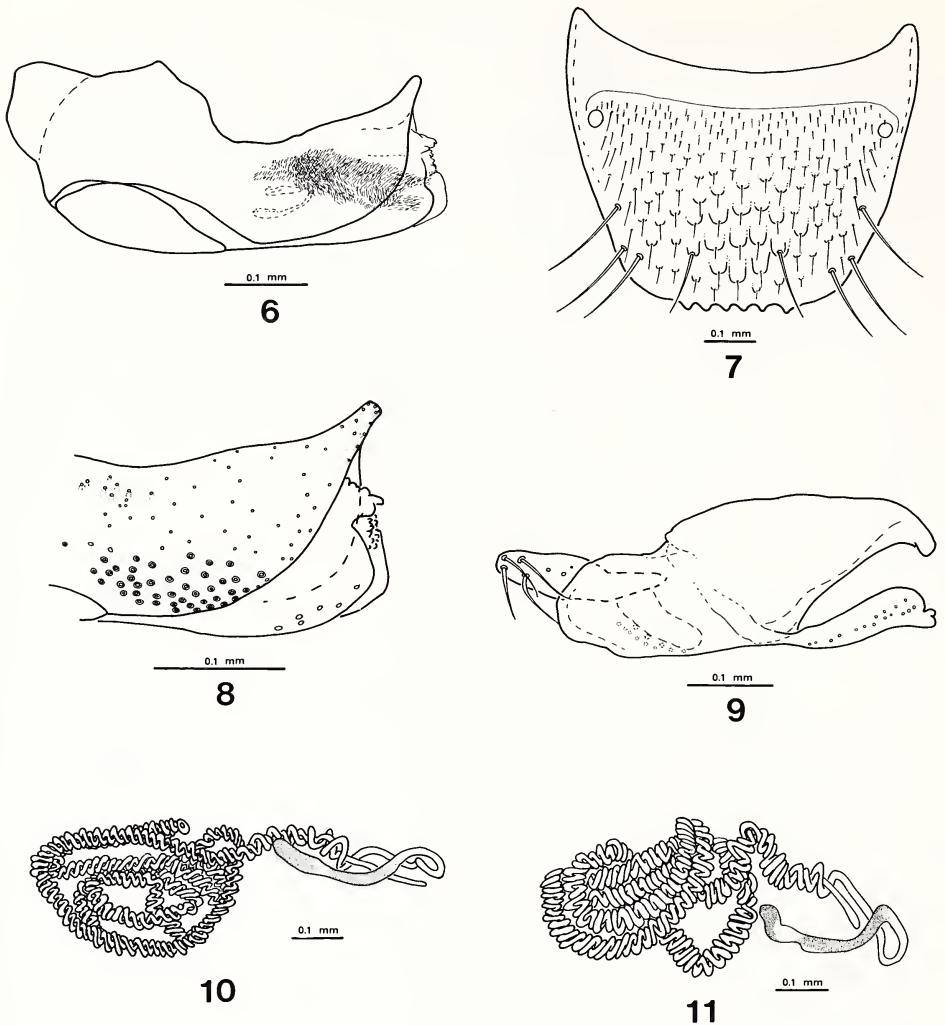
Head moderately transverse, about 1.5-1.6 times as wide as long; moderately reticulate with isodiametric sculpticells to obsolete sculpture, surface shining between punctures; microsetae short, fine, moderately dense and uniformly distributed; punctures moderate in size, about as large as distance between the punctures, uniformly distributed. Anterior margin of clypeus very slightly emarginate medially. Antenna moderate in length, not noticeably robust, extended to basal 0.3-0.4 of elytra; articles more or less loosely arranged, spaces between articles greater than 0.25 times length of articles; article II about 0.8-0.9 times length of III, not robust and only slightly broad apically; article IV slightly wider than apex of III, quadrate to moderately transverse, up to 1.2-1.3 times as wide as long; article V broader than IV, shape various, slightly elongate, quadrate, or slightly transverse; articles V-X becoming progressively shorter and more transverse to article X, or little difference in shape of articles V-X; article X quadrate to moderately transverse, up to 1.8 times as wide as long; article XI about as long as IX-X together; articles VI-X very slightly flattened laterally. Pronotum flattened and explanate dorsally, broadly transverse, about 1.7-1.9 times as wide as long, anterior margin slightly and very broadly emarginate around base of head, posterior margin very slightly to obsoletely bisinuate basally; surface without sculpture to reticulate microsculpture obsolete, surface shining between punctures; microsetae fine, moderately dense, uniformly distributed; punctures moderate



Figs. 2-5. *Tachiona latipennis* Ashe. 2. Maxilla, dorsal aspect. 3. Labrum, dorsal aspect. 4. Mandible, dorsal aspect. 5. Labium, ventral aspect.

in size and density, about as large as distance between punctures, slightly larger medially than laterally, uniformly distributed. Elytra about 1.3 times as long as pronotum and about as wide at base as width of pronotum; outer apical angles slightly and broadly sinuate; punctures moderately dense, uniformly distributed, about as large as distance between punctures; integument between punctures obsolete reticulate, surface shining. Tarsi slightly robust and very slightly flattened laterally. Abdominal terga and sterna with moderate to sparse setae and punctures; integument with obsolete to moderately distinct transverse microsculpture.

AEDEAGUS. Median lobe (Figs. 6, 8) relatively simple with short robust apical



Figs. 6–11. 6–10. *Tachiona latipennis* Ashe. 6. Aedeagus, median lobe. 7. Male abdominal tergum VIII. 8. Aedeagus, apex of median lobe showing distribution and type of sensory pores. 9. Aedeagus, paramere, internal aspect. 10. Spermatheca. 11. *Tachiona deplanata* Sharp, spermatheca.

lobe and patches of fine setae internally; parameres as in Figure 9, apical lobe of paramerite with 4 setae directed toward median lobe.

SPERMATHECA. (Fig. 10) Elongate, convoluted and doubly coiled.

SECONDARY SEXUAL CHARACTERISTICS. Male: abdominal tergum VII with broad low median carina; tergum VIII produced as broad truncate lobe, apical margin of lobe with 3–4 small teeth on each half of midline; surface of terga VII–VIII with numerous, very large, posteriorly directed asperities (Fig. 7). Female: ter-

gum VII similar to male or carina absent; tergum VIII slightly produced as broad truncate lobe, apical margin of lobe entire, without serrations; surface of terga VII–VIII with numerous large, posteriorly directed asperities.

*Type.* Holotype, male, and allotype, female, each with labels as follows: "Panama, Chiriqui prov., nr. Nueva Swissa, 5-VIII-1978, wood chip web over tree hole, Q. D. Wheeler, lot no. 7841; Holotype (on female, Allotype), *Tachiona latipennis* Ashe, Desig. J. S. Ashe, 1986." Both holotype and allotype are deposited in the Field Museum of Natural History, Chicago, Illinois.

*Paratypes.* 5 (2 on microslides). All deposited in the Field Museum of Natural History, Chicago, Illinois. Same data as type.

*Distribution.* Known only from Chiriqui Province in Panama, near Nueva Swissa, 8°50'N 83°20'W, elevation 5,000–6,000 ft.

*Comments.* Specimens of *T. latipennis* retain relatively primitive states of many characters which are highly derived in other known species of *Tachiona*. The less transverse head and pronotum, somewhat more distinct microsculpture, more loosely arranged, only very slightly flattened, and quadrate to only moderately transverse antennal articles, and only slightly robust and very slightly flattened tarsi, clearly indicate that *T. latipennis* is derived more basally within *Tachiona* than is either *T. deplanata* or *T. nitida*.

DESCRIPTION OF LATE INSTAR LARVAE OF  
*TACHIONA LATIPENNIS* ASHE

Figs. 12–28

(Chaetotaxic system according to Ashe and Watrous, 1984)

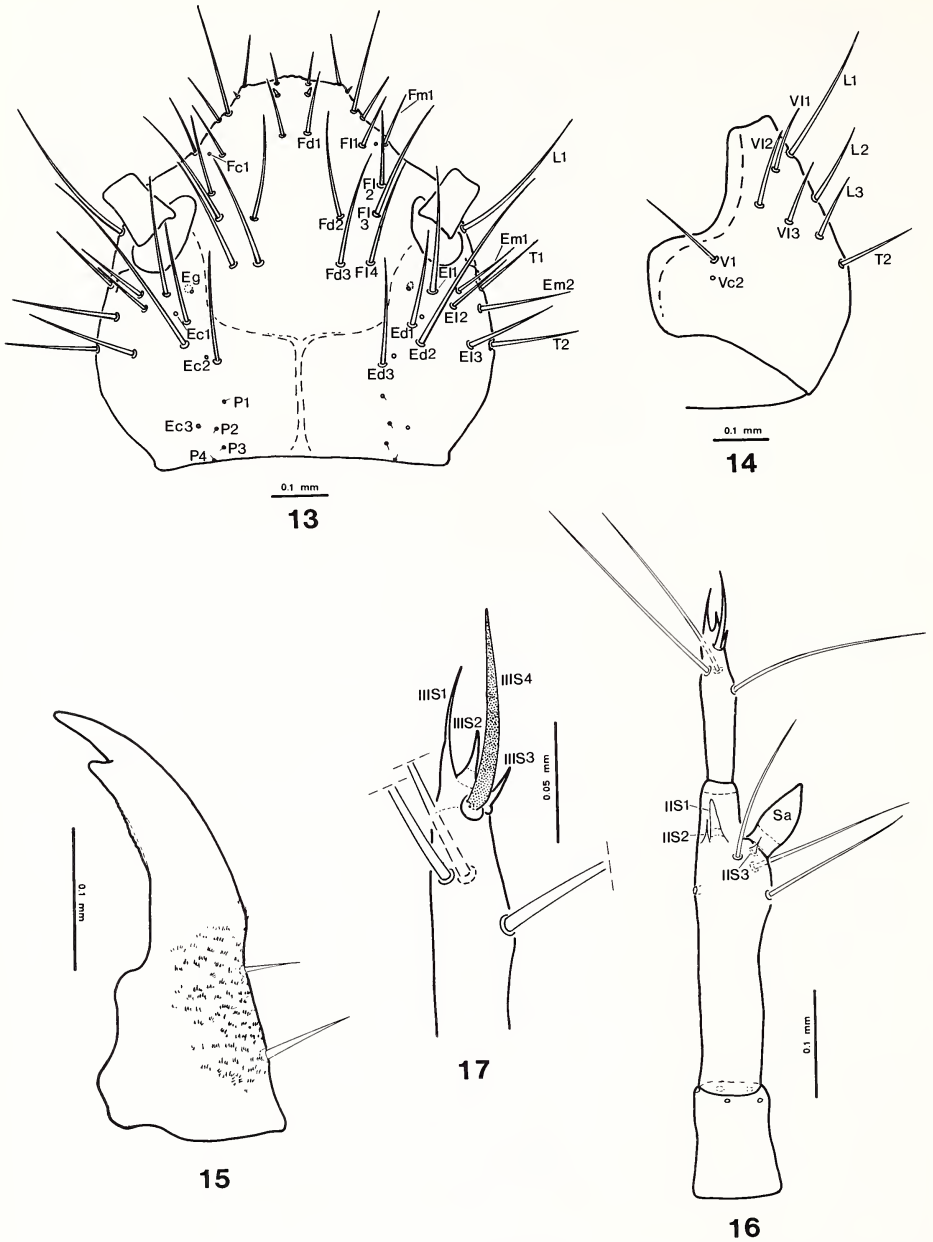
*Diagnosis.* Larvae of *Tachiona latipennis* can be distinguished from all other described aleocharine larvae by the combination of: body form markedly dorsoventrally flattened and elongate oval in dorsal outline; body setae simple, of two distinctly different types, some of medium length and slightly robust mixed with darker, much longer and more or less sinuate setae (especially P2, P4 and L4 on thoracic terga, and P2 and P4 on abdominal terga III–VII) (Figs. 22, 23, 24); relatively elongate antenna (Fig. 16) with robust and slightly asymmetrical sensory appendage and solenidia IIS2 and IIS4 fenestrate (surface appearing granulate at high magnifications, Fig. 17); distinctive pattern of spines and sensory pores on epipharynx (Fig. 19); rather long, broadly conical ligula (Fig. 21); no, or at most, very slight modification of abdominal tergum VIII in association with tergal gland (Fig. 25); tergal gland reservoir more or less membranous without sclerotized loop-like thickenings (Fig. 26); sclerotized portions of gland ducts present as 4 papillate structures (Fig. 26); and, presence of 4 large anal hooks (Fig. 27).

*Description.* GENERAL. Length of late instar larvae 5.0–6.1 mm (prob. not fully mature). General body form very markedly dorsoventrally flattened, broad and flat dorsally, elongate oval in dorsal outline, body widest at abdominal terga II and III. Color light yellowish-brown with lighter lines along ecdysial sutures of head and thoracic nota. Microsculpture absent except for scattered micropoints on frons and clypeus, and very fine micropoints on medio-basal half of abdominal terga V–VIII. Vestiture of medium or very long simple setae; very long setae extended laterally or suberect to erect and minutely but distinctly sinuate in middle third; most setae relatively robust and some irregularly curved (Fig. 12).

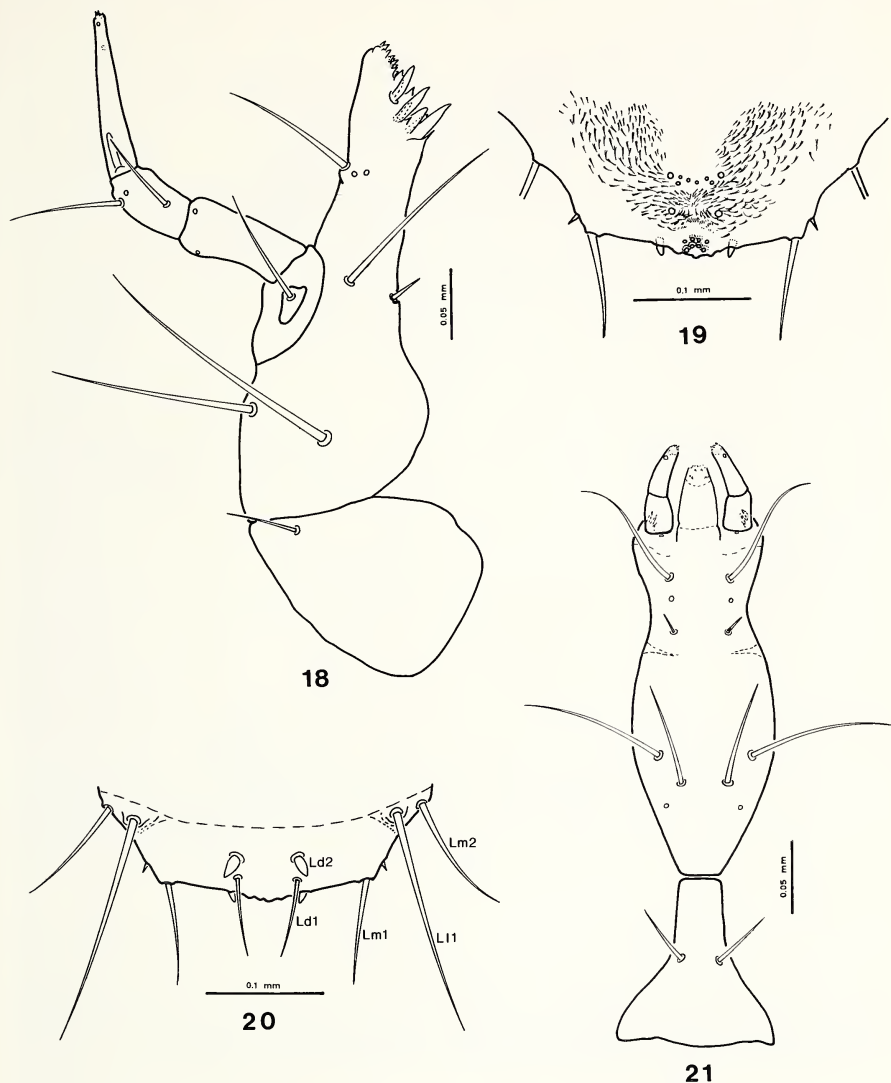


Fig. 12. *Tachiona latipennis* Ashe, late instar larva, habitus.

**HEAD.** (Fig. 13, 14) About 0.9 times as wide as long. One ocellus on each side, very small. Ecdysial sutures distinct, well developed, lateral arms lyre-shaped, complete from antennal fossae to base of head. Setation as in Figures 13, 14; characteristic head setae and sensory structures present except epicranial marginal seta Em3 absent, and campaniform sensilla frontal Fc2, lateral Lc1, 2, 3 and ventral Vc1 absent; epicranial dorsal seta Ed2 noticeably longer than other epicranial setae (0.35–0.5 times longer), and lateral seta L1 about 0.5 times longer than L2–3. Antenna as in Figures 16, 17, 3-articled; article I elongate, about 1.3 times as long as wide, with 5 campaniform sensilla around apical margin; article II about 2.8–2.9 times length of article I, constricted apical portion about 0.13–0.15 times total length of article; article III about 0.5 times length of II, article II with 3 solenidia (Fig. 16, IIS1–3) in addition to sensory appendage; sensory appendage robust, inflated, slightly asymmetrical in lateral aspect and slightly constricted apically into an indistinct nipple, about 1.2–1.3 times length of constricted portion of antennomere II; solenidium IIS1 digitiform, slightly rounded at apex, about 0.6 times length of sensory appendage, distinctly and densely fenestrate (appearing granulate) when viewed at magnifications greater than 200 $\times$ ; IIS2 spinose and filiform, about 0.5–0.7 times length of IIS1; antennomere III with 4 solenidia (Fig. 17, IIS1–4); IIS1 about 2.0 times length of IIS2, slightly inflated in basal 0.3 and filiform in apical 0.7; IIS2 somewhat robust and thick, slightly spiniform; IIS3 spiniform and setose, about as long as IIS2; IIS4 large, in a distinct socket, 1.8–1.9 times as long as IIS1, distinctly and densely fenestrate (appearing granulate) when viewed at magnifications of 200 $\times$  or greater. Labrum as in Figure 20, indistinctly or not separated from clypeus by a suture; without broadly oval internal band of sclerotization; setation consisting of 5 setae on each side, Ll1 and Lm2 located on a small lateral sclerite which is indistinctly separated from the main body of the labrum by a suture; seta Ld2 very short, robust and inflated, seta Ld1 long and filiform. Epipharynx (adoral surface of labium) as in Figure 19. Mandibles (Fig. 15) with right and left nearly identical in size and shape, slender, with pronounced preapical tooth internally and pronounced and distinct lobe in molar region; two setae in baso-lateral half large and well developed, more basal seta larger than distal seta; basal half of ventral and lateral sides with numerous very fine micropoints in short irregular rows. Maxilla as in Figure 18; cardo broadly oval, indistinctly divided internally by a sclerotized ridge, with one seta on ventro-lateral surface; stipes broad at base, not distinctly separated from mala, surface with 2 large setae, 1 on disc and 1 near lateral margin; mala with apex acutely oblique, adoral margin with spinose setae and numerous blade-like scales, most proximal scale longer than wide, dorsal surface with numerous minute cuticular micropoints in short irregular rows. Maxillary palpus (Fig. 18) of three articles in addition to basal crescentic palpifer; article I elongate, about 2.0 times as long as wide; article II about 0.75 times as long as I; article III about 0.8–0.85 times as long as I and II together; article III with basal digitiform sensory appendage on external surface. Adoral surface of labium (hypopharynx) with numerous short rows of antero-medially directed short spines. Labium (Fig. 21) consisting of fused prementum and mentum and distinctly separated (by a distinct suture) submentum; ligula elongate, broadly cone-shaped and rounded apically, about 2.0 times as long as greatest width, slightly sclerotized in apical 0.3, about 0.8–0.85 times as long as labial palps; labial palps of two articles, article II about 1.4–1.5 times as long as I; submentum with 1 pair of setae; mentum with 2



Figs. 13–17. *Tachiona latipennis* Ashe, late instar larva. 13. Head, dorsal aspect. 14. Head, ventral aspect. 15. Mandible, dorsal aspect. 16. Antenna, ventral aspect. 17. Antenna, apical segment, ventral aspect (symbols according to Ashe and Watrous, 1984).

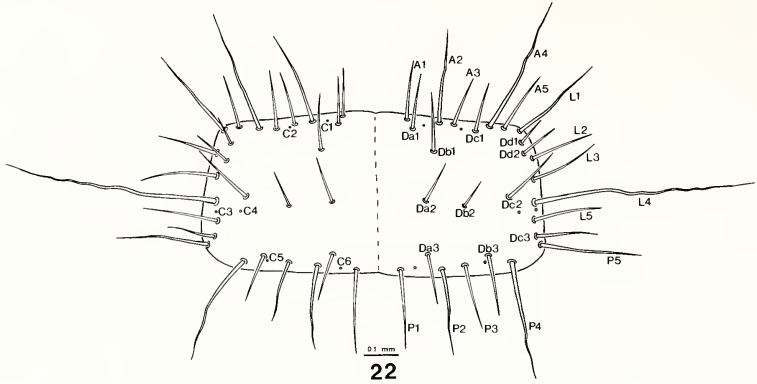


Figs. 18–21. *Tachiona latipennis* Ashe, late instar larva. 18. Maxilla, ventral aspect. 19. Internal surface of labrum, epipharynx. 20. Labrum, dorsal aspect. 21. Labium, ventral aspect (symbols according to Ashe and Watrous, 1984).

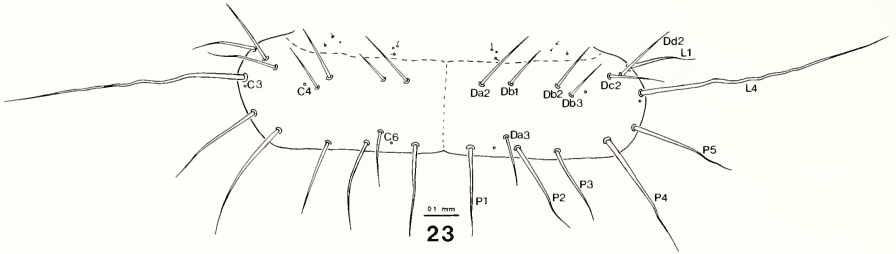
pair of setae and 1 pair of campaniform sensilla; prementum with 2 pair of setae and 2 pair of campaniform sensilla.

THORAX. Pronotum (Fig. 22) transverse; chaetotaxy with anterior, lateral and posterior rows complete (each with 5 setae) and discal rows complete (Da–c each with 3 setae and Dd with 2 setae), without accessory setae, lateral seta L4 very long

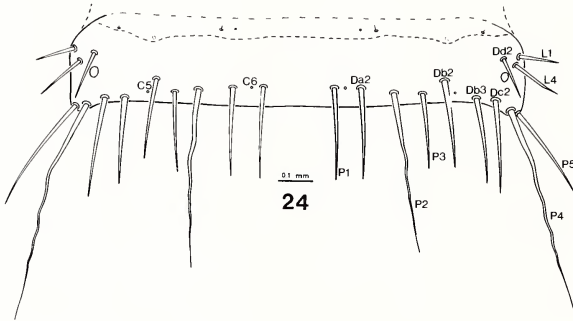




22



23

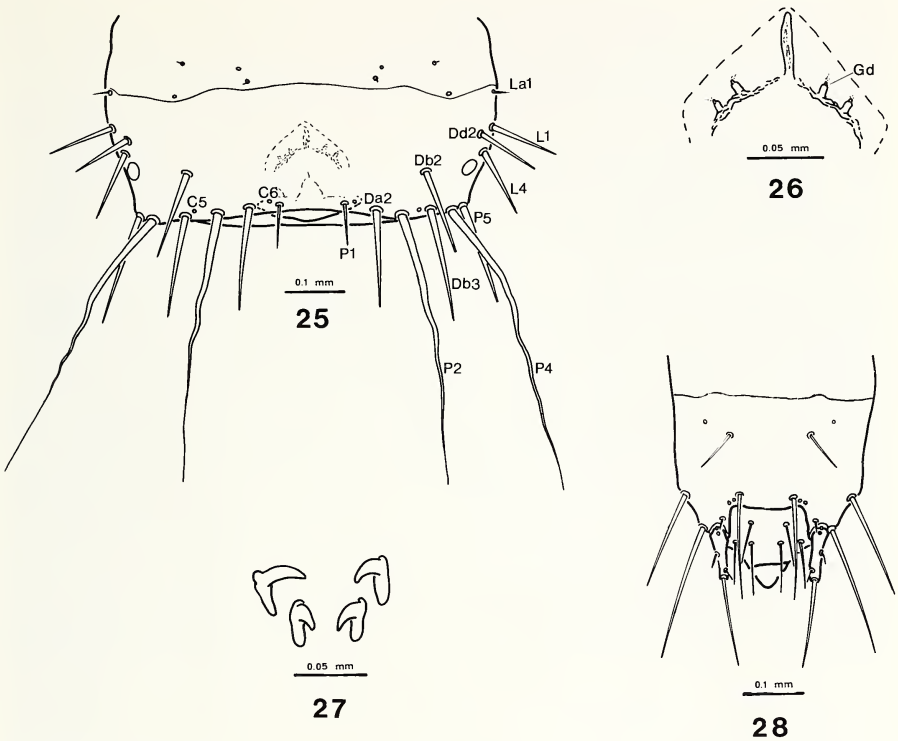


24

Figs. 22–24. *Tachiona latipennis* Ashe, late instar larva. 22. Pronotum. 23. Mesonotum. 24. Abdominal tergum IV (symbols according to Ashe and Watrous, 1984).

and sinuate in apical 0.5, anterior setae A2, A4 and posterior setae P2, P4 also longer than other setae and more or less sinuate in apical 0.5; campaniform sensilla C1–6 present. Mesonotum as in Figure 23; discal setae Da1, Dc1, Dc3 and Dd1 absent; seta Db1 located medial to Db2; lateral setae L2, L3 and L5 absent, L4 very long and sinuate in apical 0.5; campaniform sensillum C5 absent. Metanotum similar to mesonotum.

ABDOMEN. Abdominal terga I–VII very transverse; chaetotaxy as in Figure 24; discal setae Da1, Db1, Dc1, Dd1, Da3 and Dc3 absent; discal setae Da2, Db2 and Dc2 in or very near posterior row; lateral setae L2, L3 and L5 absent, L4 short, not sinuate apically; posterior seta P4 very long and sinuate in apical 0.6; posterior seta



Figs. 25–28. *Tachiona latipennis* Ashe, late instar larva. 25. Abdominal tergum VIII. 26. Tergal gland and associated structures of segment VIII. 27. Anal hooks, drawn *in situ* as withdrawn into abdominal tergum X. 28. Abdominal terga IX–X (symbols according to Ashe and Watrous, 1984).

P2 longer on more posterior terga than on more anterior terga, only slightly longer than, and very similar to, P1 on tergum I, increasing in length in each successive tergum such that P2 at least 2.0 times longer than P1 and sinuate in apical 0.5 on tergum IV; tergal setae, other than very long setae, rather thick and robust. Abdominal tergum VIII (Fig. 25) not noticeably produced dorsally or postero-medially in association with tergal gland; chaetotaxy similar to that of terga I–VII except for an additional seta in the lateral row (La1), discal setae Da2 and Db3 are in the posterior row, posterior seta P1 is very small and slender, less than 0.35 times length of Da2, posterior setae P2 and P4 are very long and sinuate in apical 0.7, P3 and Pa1 absent. Tergal gland reservoir (Fig. 26) not noticeably developed externally; sclerotized portions of gland ducts cylindrical, terminating in small nipple-like structures distal to the reservoir sac; gland reservoir slightly sclerotized, less than 0.5 times length of tergum VIII. Abdominal terga IX–X as in Figure 28; urogomphus single articulated, short, about 0.3 times length of tergum IX, each urogomphus displaced from main body of tergum IX on a short posterior elongation of postero-lateral margins of the tergum. Pseudopodal hooks present (Fig. 27), 2 pair, very large and well developed, withdrawn into tergum X in repose.

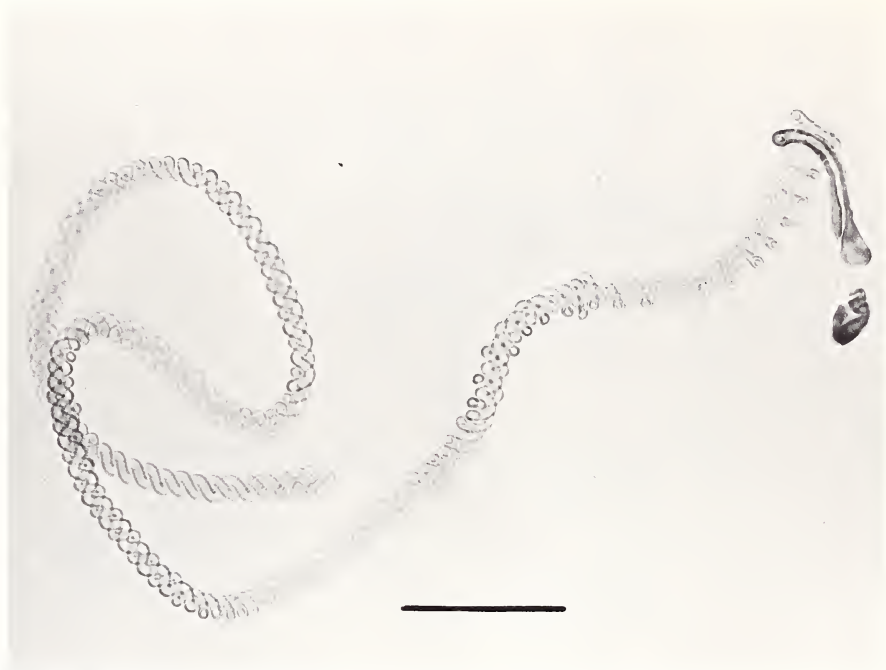


Fig. 29. *Diestota rufipennis* Casey, spermatheca. Scale bar = 0.1 mm.

*Material examined.* 16, all instars except instar I (7 on microslides). Same data as adults.

*Comments.* Ashe and Watrous (1984) chose an athetine larva as a base for their nomenclatorial system for setae because of the relatively complete set of setae found on these larvae. It is interesting that except for absence of some campaniform sensilla of the head, the chaetotaxy of larvae of *T. latipennis* differs very little from that described by Ashe and Watrous (1984) for larvae of *Atheta coriaria* Kr. However, the development of individual setae is very different and provides a number of diagnostic characteristics.

Other features show more striking difference from those of athetine larvae. These include: the rather elongate, broadly conical ligula (very slender and slightly narrowed medially among athetine larvae); the structure of the teeth on the mala of the maxilla, particularly the small slender basal spine (usually broader than long among athetine larvae); and, the structure and distribution of sensory elements and other structures on the epipharynx (compare with Ashe and Watrous 1984, fig. 11). These structures are more similar to features of larvae of *Bolitochara* and *Leptusa* than to athetines.

One of the most striking sets of differences among larvae of *Tachiona latipennis* and known larvae of other members of the tribe Bolitocharini involves characteristic features of tergum VIII and associated glandular structures. Larvae of the bolitocharine subtribes Bolitocharina (based on examination of larvae of several species of *Bolitochara* and *Leptusa*, unpublished data) and Gyrophaenina (Ashe 1986) have

a prominent posterior prolongation and enlargement of tergum VIII associated with a very large gland reservoir. In addition to large size, the reservoir is also moderately to markedly sclerotized and is strengthened by distinctive sclerotized loop-like thickenings (see Ashe 1986, fig. 59). Also, the four gland ducts are represented by sclerotized tubes.

In contrast, tergum VIII of larvae of *T. latipennis* is not noticeably enlarged in relation to the gland reservoir, and there is very little external indication of the tergal gland. In addition, the gland reservoir is virtually unsclerotized and is without loop-like thickenings, and the sclerotized portions of the gland ducts are short papillate structures rather than tube-like.

This degree of difference in these characteristics is especially surprising because of the apparent close relationship between members of the subtribes Silusina and Bolitocharina as suggested by adult structure. Since confidently identified larvae of other genera of the Silusina are not known, it is impossible to evaluate whether the tergal gland structure exhibited by larvae of *T. latipennis* is characteristic of the subtribe.

Since larvae are associated rather than reared, the possibility that they are misidentified must be considered. The reasons that the larvae described here are believed to be conspecific with adults of *Tachiona latipennis* include: the larvae were found in relatively large numbers in association with numerous adults of that species; only a single species each of larvae and adults were included in the collection; the flattened and broad body of the larvae correctly reflects the explanate body of adult *Tachiona*; the largest larvae are in a size range which would be expected of larvae of this species; and, structure of the ligula, epipharynx and maxilla (but not the tergal gland structures) is typical of other bolitocharines and different from those of athetines, oxypodines or known members of other tribes. Taken in concert these represent compelling evidence that the larvae described here are correctly associated. In addition, discovery of very similar larvae in association with adults of *Tachiona nitida* adds considerable strength to this proposition.

*Comparison with larvae of Tachiona nitida Ashe.* Larvae of *T. nitida* are very similar in general habitus, color, chaetotaxy, and detailed structure to those of *T. latipennis*. Late instar larvae of *T. nitida* differ in the following features: dorsum of head with epicranial campaniform Ec2 absent, epicranial dorsal seta Ed2 very large and slightly sinuate; venter of head with ventral campaniform sensilla Vc2 absent and Vc1 present; antennal solenidium IIS2 somewhat more distant from IIS1, IIS3 slightly smaller, and sensory appendage of antennomere II not as asymmetrical; chaetotaxy of abdominal terga with posterior seta P2 not noticeably longer than P1 on terga I-IV, but P2 very large, dark and markedly sinuate on terga V-VIII.

Eight larvae, of all instars, of *Tachiona nitida* were available for examination. One of these was much larger and fatter than the others, with sclerites widely separated by extensive areas of intersegmental membrane. It seems possible that this individual may be a prepupa.

*Early instar larvae.* First instar larvae of *T. latipennis* were not available; however, first instar larvae of *T. nitida* are similar in habitus and general structure to later instar larvae, except that the chaetotaxic pattern is similar to that described for first instar *Atheta coriaria* Kr. (Ashe and Watrous 1984:178) though size and structure of many setae differ markedly from comparable setae of *A. coriaria*. In addition to this difference in chaetotaxic pattern, first instar larvae of *T. nitida* differ from those of

later instar larvae in the following ways: antennal articles much shorter, antenna short and stout; antennal solenidium IIS3 absent; antennomere III with dark pigment throughout; molar lobe of each mandible extended adorally into a minute but distinct spine; dorsal surface of head with prominent hatching spine on each side of midline medial to epicranial posterior seta P1; pronotal lateral seta L4 large but not noticeably darker or more sinuate than other pronotal setae, posterior setae P2 and P4 larger than other posterior setae but not sinuate; mesonotal lateral seta L4 very large, dark and markedly sinuate, posterior setae P2 and P4 similar to those on pronotum; metanotum similar to mesonotum, hatching spines absent; abdominal terga I–VIII with posterior setae P2 and P4 variously developed; posterior setae P2 and P4 on abdominal terga I–IV similar in size and structure, larger than other posterior setae, and not sinuate; posterior seta P4 on abdominal terga V–VIII much larger and darker than on more anterior terga and markedly sinuate; posterior seta P2 on abdominal terga V–VII larger than all posterior setae except P4 but not noticeably darker or sinuate; posterior seta P2 on abdominal terga VIII very large, dark and markedly sinuate; gland reservoir of abdominal tergum VIII somewhat fainter; gland ducts very slightly sclerotized, tube-like, very thin and irregularly looped; urogomphi typical of first instar aleocharine larvae, about as long as tergum X, thin, slightly recurved near base, each with a very long apical seta and a much shorter preapical seta; anal hooks 4, very large and prominent.

The most unusual feature of these first instar larvae, other than those unusual features that characterize *Tachiona* larvae in general, is the presence of hatching spines on the dorsum of the head and the absence of such spines elsewhere on the body. Most first instar aleocharine larvae have hatching spines medio-posteriorly on the metathorax and, in specimens of some species, on one or more anterior abdominal terga (Ashe and Watrous, 1984; Ashe, 1986). We are not aware of any other aleocharine larvae, either described or undescribed, which have hatching spines on the head.

#### DISCUSSION

Sharp (1883) made special mention of the unusual body form of members of *Tachiona* and noted that they showed considerable resemblance to members of the genera *Dinusa* Saulcy and *Dinarda* Mannerh., both of which are in the tribe Oxy-podini. However, *Tachiona* did not appear to him to be related to these genera. Instead, he was correct in noting that *Tachiona* must be placed in the "group Bolitocharaires of Rey" (p. 284) (probably referring to Mulsant and Rey, 1871). In addition to tarsal formula, Sharp also noted that the members of *Tachiona* had maxillary lobes that were elongate and prominent, but he incorrectly observed the labial palpi to be short and inconspicuous. However, Mulsant and Rey's grouping was based primarily on the shared presence of a 4,4,5 tarsal segmentation, and, as a result it contained a structurally diverse grouping of genera.

By the time *Tachiona* was next mentioned in the literature by Fenyés (1918, 1920) it was apparent that subdivisions of the heterogeneous assemblage of genera in the tribe Bolitocharini (approximately equal to the Bolitocharaires of Rey) were necessary. Fenyés (1918) recognized 14 "groups" within the tribe Bolitocharini and placed *Tachiona* in the "Group Leptusae" based apparently on the incorrect description of the mouthparts provided by Sharp.

The only other mention of *Tachiona* was by Bernhauer and Scheerpeltz (1926). They likewise classified the genus based on Sharp's description and Fenyés' placement. They combined Fenyés' groups Leptusae and Bolitocharae into the subtribe Bolitocharae, within which they included *Tachiona*.

Since neither Fenyés nor Bernhauer and Scheerpeltz appear to have examined specimens of *Tachiona*, they could not have known that this genus is more correctly placed in the subtribe Silusina (group Silusae of Fenyés, subtribe Silusae of Bernhauer and Scheerpeltz).

Among aleocharines that have 4,4,5 tarsal segmentation, the subtribe Silusina is characterized by the distinctive styliform labial palpi and the elongate and prominent maxillary lobes (Lohse, 1974; Seevers, 1978). Based on our examination of the structural features of nine silusine genera (*Diastota* Muls. and Rey, *Elachistartheron* Notm., *Neosilusa* Cam., *Ousilusa* Cam., *Plagiusa* Bernh., *Pseudoplacusa* Cam., *Stenomastax* Cam., *Silusa* Er., and *Tachiona* Sharp), the members of this subtribe have a striking number of similarities, especially in mouthpart structure. Most characteristic is the detailed structure of the styliform labial palpi. The suture between the basal and the second labial article is fused and virtually indistinguishable. This gives the appearance of long, slender two-segmented labial palpi. In addition, the apical segment is divergent and recurved such that the field of sensory structures at the apex is directed slightly to moderately inwardly rather than anteriorly as it is among most other aleocharines. Distinctive features are also found on the prementum. The two medial setae of the prementum are placed very close together, and the medial pseudopore field is narrowed laterally so that medial pseudopores (see Sawada, 1972) are compressed into a narrow longitudinal row. They also have two "real pores" medial to the "setose pore" in each lateral field (terms for porose structures according to Sawada, 1972). While other aleocharines may have some of these labial characteristics, this combination appears to be unique to silusines.

The maxilla of silusines is also very distinctive, especially among those aleocharines with 4,4,5 tarsal segmentation. Both galea and lacinia are elongate. Most striking is the relatively long narrow apical third of the lacinia, with its single row of more or less widely dispersed teeth (especially long and narrow among members of *Silusa*). The dense patch of spinose setae near the middle and the well defined longitudinal row of setae dorsally on the lacinia are also distinctive.

All of these characteristics are well illustrated in the mouthparts of *Tachiona* (Figs. 2, 5).

Members of other groups of aleocharines are also characterized by stylate labial palpi and elongate maxillary lobes. This is especially evident among members of *Myllaena* and related groups, though such modified mouthparts are not limited to this group. However, the details of mouthpart structure are very different between these groups and members of the Silusina.

Lack of a strong comparative base makes it very difficult to evaluate primitive and derived states of many mouthpart characters found among aleocharines. Nonetheless, the limited distribution of many states found among silusines (in comparison to several other distinct lineages) suggests that at least some are likely to be uniquely derived apomorphies. This provides considerable evidence that members of the subtribe Silusina form a monophyletic group. Yet the secondary sexual characteristics of some silusines (especially *Silusa*) and their general habitus show a remarkable

similarity to those of *Bolitochara* (in a broad generic sense) (subtribe Bolitocharina). The crenulate hind margin of male tergum VIII as well as the presence of a medial knob or carina on tergum VII and the triangular posterior projection of sternum VIII among males of *Bolitochara* and *Silusa* makes it difficult to avoid the conclusion that they are closely related. This contrasts markedly with the very different mouthparts of members of these two genera.

Among silusine genera, the broad, flattened body form of members of *Tachiona* is highly distinctive. However, they share an unusually large suite of characteristics with members of *Diestota* Mulsant and Rey. These include: 1) mesocoxal cavities very widely separated by broad meso- and metasternal processes; 2) bifid ligula and similar distribution of pores on the prementum of the labium; 3) similar distribution of denticles in the molar region of the mandibles-denticles arranged in distinct transverse rows with the largest denticles in the most distal row (Fig. 4); and, 4) remarkable similarities in the spermatheca and aedeagus. Among these similarities, those in the spermatheca and aedeagus seem most significant.

The spermatheca of females of *Diestota* are very unusual. The neck of the spermatheca is greatly elongated and is tightly doubly coiled with a smaller coil inside the tube formed by the outside coil (Fig. 29) (based on examination of *D. brasiliiana* Bernh., *D. laticornis* Sharp, *D. luederwaldti* Bernh., *D. obsoleta* Er., *D. rufipennis* Csy., and *D. testacea* Kr.). The distinctive features are very similar among all species of *Diestota* examined (see also illustration of spermatheca of *D. luzonica* Bernh., Sawada, 1971, fig. 2I). These are very similar to the complex doubly coiled and convoluted spermathecae of members of *Tachiona* (Figs. 10, 11). The spermathecae of *Tachiona* and *Diestota* are also similar in that the basal bulb is elongate and is divided into distinctive anterior and posterior sections by a very slightly sclerotized medial region (note basal bulb in Figs. 11, 12, and 29). Size and shape of these sclerotized portions of the basal bulb of the spermatheca is remarkably similar among examined members of these two genera. Members of other silusine genera examined have simple spermathecae.

Equally striking are similarities in the aedeagus. The median lobes of examined members of *Diestota* (*D. angustula* Csy., *D. brasiliiana* Bernh., *D. laticornis* Shp., *D. luederwaldti* Bernh., *D. obsoleta* Er., *D. rufipennis* Cys., and *D. testacea* Kr.) and *Tachiona latipennis* are similar in that the apical process is broad, tent-like, and simple, and is covered with a distinctive pattern of numerous pore-like sensory structures. The apical process of all species examined in both genera has two distinct types of pore-like structures. The more basal ones are very large and appear to be doubly ringed because the edges are apparently raised into a fine ridge. The more dorsal pores are simpler and appear as unmodified holes in the cuticle under light microscopy (Fig. 8). I have not seen a similar pattern of sensory structures among median lobes of other silusines that I have examined, though both types of sensory structures may be present in other patterns on the median lobe of other species.

Clearly, until considerably more comparative study of a wider variety of genera and species in the Silusina and related subtribes has been completed generic relationships within the subtribe must remain obscure. Thus it is premature to strongly advocate a close relationship between *Tachiona* and *Diestota* within the Silusina. However, the similarities discussed above are highly suggestive, and should provide

the basis for more detailed examination of character states among silusine and related aleocharine genera.

#### ACKNOWLEDGMENTS

We thank the following individuals and institutions for their contributions to this project. Dr. Alfred F. Newton, Jr. and Dr. Margaret K. Thayer read and provided helpful comments on the manuscript. Mr. Peter Hammond generously provided us with the opportunity to examine the complete syntype series of *Tachiona deplanata* by arranging for the loan of specimens deposited at the British Museum (Natural History). Mr. Rick Hoebeke brought the collection of larvae and adults of *T. nitida* to our attention and arranged for loan of these specimens from the entomological collections of Cornell University. This research was supported by National Science Foundation research grant BSR-8415660 held by J. S. Ashe and BSR-8315457 held by Q. D. Wheeler. Mr. Thomas Mooney provided outstanding technical support, and Mrs. Frances Fawcett provided the habitus illustrations of the adult and larva of *Tachiona latipennis*.

#### LITERATURE CITED

- Ashe, J. S. 1981. Construction of pupal cells by larvae of Aleocharinae (Coleoptera: Staphylinidae). *Coleop. Bull.* 35(3):341-344.
- Ashe, J. S. 1986. Structural features and phylogenetic relationships among larvae of genera of gyrophaenine staphylinids (Coleoptera: Staphylinidae: Aleocharinae). *Fieldiana: Zoology*, new series 30:1-60.
- Ashe, J. S. and L. E. Watrous. 1984. Larval chaetotaxy of Aleocharinae (Staphylinidae) based on a description of *Atheta coriaria* Kraatz. *Coleop. Bull.* 38(2):165-179.
- Bernhauer, M. and O. Scheerpeltz. 1926. *Coleopterorum catalogus*. Pars 82, Staphylinidae 6: 499-988.
- Fenyés, A. 1918. *Genera Insectorum*, 173a. Coleoptera. Family Staphylinidae, Subfamily Aleocharinae. Pasadena, Calif., pp. 1-110.
- Fenyés, A. 1920. *Genera Insectorum*, 173b. Coleoptera. Family Staphylinidae, Subfamily Aleocharinae. Pasadena, Calif., pp. 111-414.
- Frank, J. H. and M. C. Thomas. 1984. Cocoon-spinning and the defensive function of the medial gland in larvae of Aleocharinae (Coleoptera: Staphylinidae): A review. *Questiones Entomologicae* 20:7-23.
- Lohse, G. A. 1974. *Die Käfer Mitteleuropas*. Bd. 5. Staphylinidae II (Hypocyphtinae und Aleocharinae), Pselaphidae. Goeke & Evers. Krefeld. 381 pp.
- Mulsant, E. and C. Rey. 1871. *Histoire Naturelle des Coleopteres de France*. vol. 24. Brevipennes (Aleochariens). Deyroolle Fils, Paris, pp. 1-321.
- Sawada, K. 1971. Some Aleocharinae (Staphylinidae, Coleoptera) collected from Philippines and Java. *Contributions from the Biological Laboratory Kyoto University* 23(2):61-76.
- Sawada, K. 1972. Methodological research in the taxonomy of Aleocharinae. *Contributions of the Biological Laboratory of Kyoto University* 24(1):31-59.
- Seevers, C. H. 1978. A generic and tribal revision of the North American Aleocharinae (Coleoptera: Staphylinidae). *Fieldiana: Zoology* 71:1-289.
- Selander, R. B. and P. Vaurie. 1962. A gazetteer to accompany the "Insecta" volumes of the "Biologia Centrali-Americana." *Amer. Mus. Novitates* 2099:1-70.
- Sharp, D. 1883. *Biologia Centrali-Americana: Insecta, Coleoptera I. Pt. 2. Staphylinidae*. London, pp. 145-312, pls. 6-7.

Received July 10, 1987; accepted October 20, 1987.